

CLAIMS

What is claimed is:

1. A dynamoelectric machine comprising:

a housing defining a drive end and an opposite slip ring end;

a stator;

a rotor rotatable within said stator, said rotor including more than two flux carrying segments rotatably disposed on a rotor shaft in said housing, each segment having $P/2$ claw poles, wherein P is an even number; and

a rotor assembly including two fans located adjacent to outbound segments defining said rotor and opposite each other disposed inside said housing and mounted concentric with said rotor shaft.
2. The machine of claim 1, wherein said two fans include a drive end fan and a slip ring end fan disposed at said drive end and said slip ring end, respectively, said drive end fan configured to axially draw drive end air into said drive end, said slip ring end fan configured to axially draw slip ring end air into said slip ring end.
3. The machine of claim 2, wherein said drive end is configured to exhaust a first portion of said drive end air radially out of said housing on a first side of said stator corresponding to said drive end, while a second portion of said drive end air is diverted axially through said stator and radially exhausted from said housing on an opposite second side of said stator corresponding to said slip ring end.
4. The machine of claim 3, wherein said slip ring end is configured to exhaust said slip ring end air radially out of said housing on said opposite second side of said stator corresponding to said slip ring end.
5. The machine of claim 1, wherein a coil winding is disposed intermediate each of said more than two flux carrying segments.

6. The machine of claim 5, wherein each coil winding is energized providing a first magnetic polarity on outbound claw poles defining said rotor and a second polarity opposite said first polarity on claw poles intermediate said outbound claw poles.

7. The machine of claim 1, wherein permanent magnets are disposed between said each segment to enhance at least one of output and efficiency.

8. An alternating current (AC) generator for a motor vehicle comprising:

a housing defining a drive end and an opposite slip ring end;

a stator;

a field rotor rotatable within said stator, said rotor including more than two flux carrying segments rotatably disposed on a rotor shaft in said housing, each segment having $P/2$ claw poles, wherein P is an even number; and

a rotor assembly including two fans located adjacent to outbound segments defining said rotor and opposite each other disposed inside said housing and mounted concentric with said rotor shaft.

9. The generator of claim 8, wherein said two fans include a drive end fan and a slip ring end fan disposed at said drive end and said slip ring end, respectively, said drive end fan configured to axially draw drive end air into said drive end, said slip ring end fan configured to axially draw slip ring end air into said slip ring end.

10. The generator of claim 9, wherein said drive end is configured to exhaust a first portion of said drive end air radially out of said housing on a first side of said stator corresponding to said drive end, while a second portion of said drive end air is diverted axially through said stator and radially exhausted from said housing on an opposite second side of said stator corresponding to said slip ring end.

11. The generator of claim 10, wherein said slip ring end is configured to exhaust said slip ring end air radially out of said housing on said opposite second side of said stator corresponding to said slip ring end.

12. The generator of claim 8, wherein a coil winding is disposed intermediate each of said more than two flux carrying segments.

13. The generator of claim 12, wherein each coil winding is energized providing a first magnetic polarity on outbound claw poles defining said rotor and a second polarity opposite said first polarity on claw poles intermediate said outbound claw poles.

14. The generator of claim 8, wherein permanent magnets are disposed between said each segment to enhance at least one of output and efficiency.